

What is claimed is:

1. An active smart antenna system comprising:

an antenna for receiving a signal;

5 a low noise amplifier for amplifying a signal received through the antenna
so as to minimize a noise generation; and

a phase shifter for controlling a phase of the amplified signal,

wherein the antenna, the low noise amplifier, and the phase shifter are
formed on one high resistance substrate.

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2. The active smart antenna system of claim 1, wherein the high
resistance substrate is preferably selected among a high resistance silicon
substrate, a high resistance ceramic substrate, and a printed circuit board (PCB).

15 3. The active smart antenna system of claim 2, wherein the high
resistance substrate is a substrate of two surfaces having signal electrodes for
connecting upper and lower surfaces thereof.

4. The active smart antenna system of claim 2, wherein the antenna
20 is one between a patch antenna and a slot antenna.

5. The active smart antenna system of claim 2, wherein the phase
shifter is constituted with signal electrodes, ground electrodes, inductors
respectively formed of the same conductive material, and an electron switch and a
25 capacitor connected to the signal electrodes.

6. The active smart antenna system of claim 5, wherein the inductor is formed as a strip line structure or a spiral structure by a micro electro mechanical system (MEMS) technique.

5 7. The active smart antenna system of claim 5, wherein the electron switch is formed as a bare chip form that is connected to the signal electrodes by a bonding wire.

8. The active smart antenna system of claim 7, wherein the electron
10 switch further includes a polymeric protection material.

9. The active smart antenna system of claim 5, wherein the electron switch is formed at an etched part of the high resistance substrate after partially etching the high resistance substrate.

15 10. The active smart antenna system of claim 5, wherein the electron switch is formed as a bare chip form connected to the signal electrodes by a flip chip bonding technique.

20 11. The active smart antenna system of claim 10, wherein the electron switch further includes a polymeric protection material.

12. The active smart antenna system of claim 2, wherein the low noise amplifier is formed as a bare chip form connected to the signal electrodes by
25 a bonding wire.

13. The active smart antenna system of claim 2, wherein the low noise amplifier is formed as a bare chip form connected to the signal electrodes by a flip chip bonding technique.

5 14. The active smart antenna system of claim 1, wherein the high resistance substrate is one selected among an Epoxy PCB, a Teflon PCB, and an Low temperature co-fired ceramic (LTCC) PCB.

10 15. The active smart antenna system of claim 11, wherein the phase shifter is constituted with signal electrodes, ground electrodes, inductors respectively formed of the same conductive material, and an electron switch and a capacitor connected to the signal electrodes.

15 16. The active smart antenna system of claim 15, wherein the inductor is stacked inside the high resistance substrate.

20 17. A method for fabricating an active smart antenna system, wherein an antenna for receiving a signal, a low noise amplifier for amplifying a signal received through the antenna so as to minimize a noise generation, and a phase shifter for controlling a phase of the amplified signal are formed on one high resistance substrate.

25 18. The method of claim 17, wherein the high resistance substrate is one selected among a high resistance silicon substrate, a high resistance ceramic substrate, and a printed circuit board (PCB).

19. The method of claim 18, wherein the high resistance substrate is a substrate of two surfaces having signal electrodes for connecting upper and lower surfaces thereof.

5 20. The method of claim 18 comprising the steps of:
uniformly forming a conductive layer on one high resistance substrate;
patterning the conductive layer and thereby forming signal electrodes,
ground electrodes, and inductors; and
respectively forming an electron switch and a capacitor connected to the
10 signal electrodes on the ground electrode and the signal electrode.

21. The method of claim 20, wherein the electron switch is formed as a bare chip form connected to the signal electrodes by a bonding wire.

15 22. The method of claim 21, further comprising a step for forming a polymeric protection material for protecting the electron switch.

23. The method of claim 20, wherein the electron switch is formed as a bare chip form connected to the signal electrodes by a flip chip bonding
20 technique.

24. The method of claim 23, further comprising a step for forming a polymeric protection material for protecting the electron switch.

25 25. The method of claim 20, wherein the electron switch is formed at

an etched part of the high resistance substrate after partially etching the high resistance substrate.

26. The method of claim 25, further comprising a step for forming a
5 polymeric protection material for protecting the electron switch.

27. The method of claim 20, further comprising a step for forming an antenna by patterning the conductive layer.

10 28. The method of claim 27, wherein the antenna is one between a patch antenna and a slot antenna.

29. The method of claim 20, further comprising a step for forming a low noise amplifier connected to the signal electrodes.

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